The Magnitude and Significance of Land Clearance in Tasmania in the 1980s

Jamie Kirkpatrick
Department of Geography and Environmental Studies
University of Tasmania

Abstract

Six thousand hectares of natural vegetation were cleared per annum in the period 1980-88, a reduction by one third of the rate between 1972 and 1980. Clearing is concentrated in plant communities with poor reservation status, with some communities being threatened with extinction by this process. Some options are raised to maintain important natural vegetation on private land.

Introduction

In the period 1972-80, 15 000 ha of Tasmania's natural vegetation were either cleared or inundated on average each year (Kirkpatrick and Dickinson 1982). A substantial proportion of this loss was in poorly reserved or unreserved communities (Kirkpatrick and Dickinson 1982). Some of these plant communities have since proven to have high concentrations of threatened and unreserved species (Kirkpatrick *et al.* 1988, 1991). During the 1980s, loss of natural vegetation to inundation had almost ceased, but land clearance for agriculture and tree plantations continued. The present study documents the expansion of cleared land in the period 1980-88 and discusses the implications of this clearance for nature conservation.

Methods

Cloud-free 1:250 000 LANDSAT satellite images were obtained for 1980 and 1988-89. Land clearance boundaries were interpreted and mapped from these images which have a pixel size equivalent to an average backyard. The area of land cleared in the intervening period was measured from overlays. The major interpretation difficulty related to forest land that had recently been clearfelled. There is a period of approximately one year after forest has been clearfelled in which it is not clear whether it is new pasture, new plantation or regenerating forest. Some of these difficulties were easily resolved on the basis of knowledge of the locations of plantation programmes and the size and juxtaposition of the disturbed areas. Where such land seemed unlikely to be cleared for plantation establishment, it was assumed to be incipient pasture on private land and regenerating forest on public land.

The type of vegetation that was cleared was determined by reference to the map of Kirkpatrick and Dickinson (1984).

Results and discussion

The land clearance rate averaged 6 000 ha per annum in the period 1980-88. The geographic distribution of land clearance differed little from the situation in 1972-80 (Fig. 1, cf. Fig. 1 in Kirkpatrick and Dickinson 1982). However, the rate of clearance had reduced by one third, possibly a reflection of the declining availability of natural vegetation on relatively flat private land and deep soils. Several landowners undertook massive clearance programmes in the period of study (Fig. 1), while much similar private land remained uncleared. Nevertheless, some distinct forest types have been rendered almost extinct by clearing, including the types

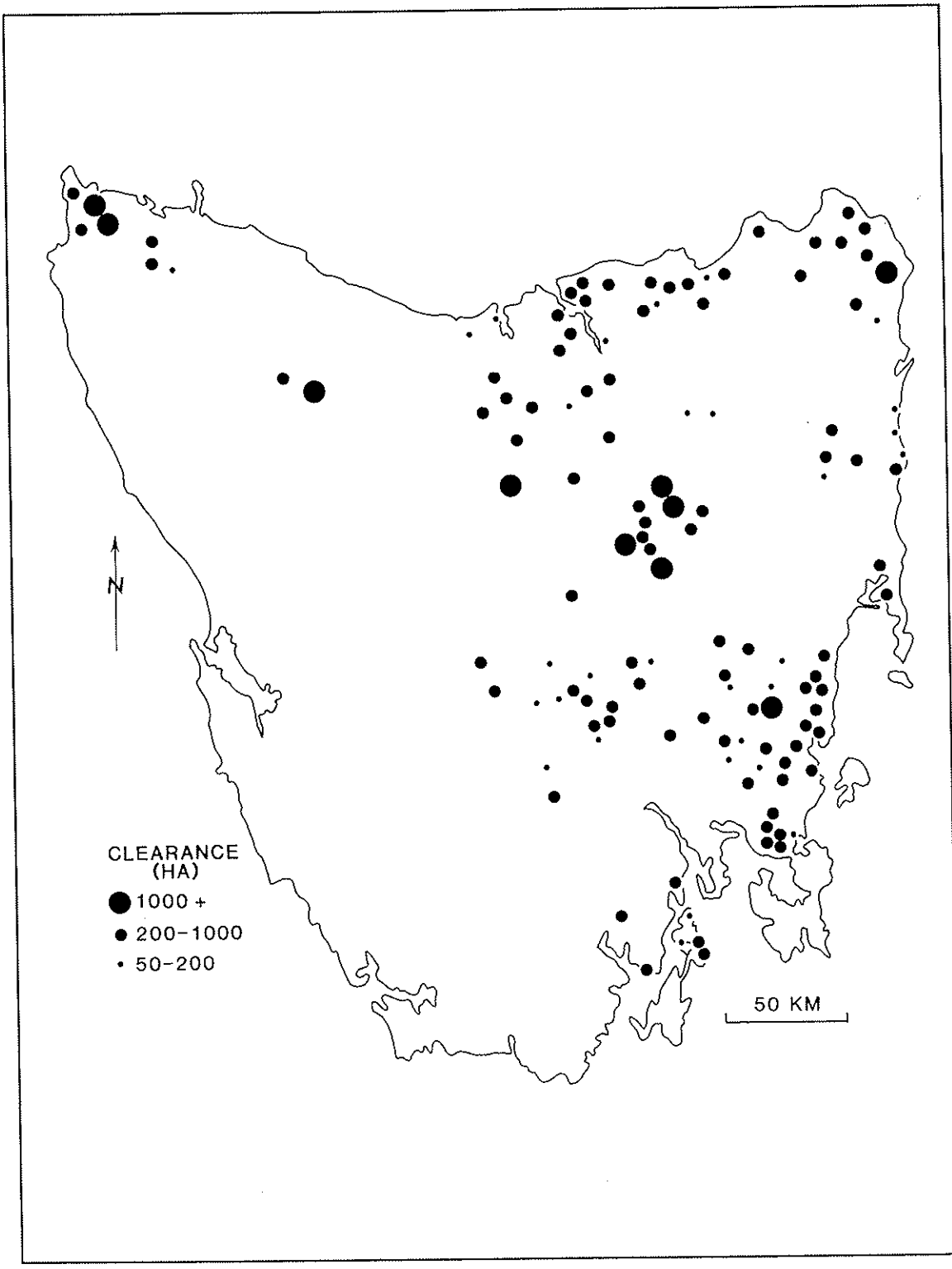

Figure 1. Land clearance 1980-88.

on soils with ironstone gravel in the Midlands (see Fensham and Kirkpatrick 1989) and forests with *Eucalyptus rubida*, also in the drier parts of the State.

Much of the land clearance was concentrated in vegetation types with low percentages of reservation of their surviving areas in secure reserves (Table 1). Many of these vegetation types are largely confined to private land, suggesting that their future is dependent on the development of mechanisms to prevent at least some clearance by landowners. Voluntary constraints on clearing are unlikely to work in the long term, as all private land is likely to eventually gain an owner dedicated to clearance. However, voluntary entry of land with significant nature conservation values into a status that precludes future clearance may be an appropriate mechanism, as long as the landowner is not expected to bear any more than her/his social share of the net costs. A clearance permit system similar to those in South Australia and Victoria is another alternative. Such systems require a substantial community investment in their administration and management. Unless some effective mechanism is developed in the next few years, the adverse impact of land clearance on Tasmanian biodiversity is likely to be substantial.

Table 1. Land clearance 1980-88 by vegetation type (Kirkpatrick and Dickinson 1984) showing reservation of remaining areas of types in 1988.

Vegetation type	% cleared p.a. (1980 base)	area 1988 ('000 ha)	% reserved[1] (1988 base)
Sclerophyll forest	0.77	186	8
Grassy woodland*	0.74	50	0
Inland *E. tenuiramis* dry forest*	0.66	60	1
Inland grassy forest	0.65	175	< 1
Coastal grassy forest	0.42	192	4
Swamp forest*	0.26	9	5
Grassland*	0.20	59	4
E. sieberi dry forest	0.09	48	< 1
E. obliqua wet forest	0.08	154	8
Rainforest	0.08	539	43
Scrub	0.04	116	77
E. delegatensis forest	0.03	308	19
E. obliqua tall forest	0.03	479	9
Buttongrass moor	0.03	1145	51
Heath*	0.03	200	6

[1] From Kirkpatrick and Brown (1991).
* More than half of the area of these types has probably been cleared since European settlement.

References

Fensham, R. and Kirkpatrick, J.B. (1989) The conservation of original vegetation remnants in the Midlands, Tasmania. *Pap. Proc. R. Soc. Tasm.* 123: 229-246.

Kirkpatrick, J.B. and Brown, M.J. (1991) *Reservation Analysis of Tasmanian Forests.* Report to the Resource Assessment Commission.

Kirkpatrick, J.B. and Dickinson, K.J.M. (1982) Recent destruction of natural vegetation in Tasmania. *Search* 13: 186-187.

Kirkpatrick, J.B. and Dickinson, K.J.M. (1984) *Vegetation Map of Tasmania 1:500 000.* Forestry Commission, Tasmania.

Kirkpatrick, J.B., Gilfedder, L. and Fensham, R. (1988) *City Parks and Cemetries: Tasmania's Remnant Grasslands and Grassy Woodlands.* Tasmanian Conservation Trust Inc., Hobart.

Kirkpatrick, J.B., Gilfedder, L., Harris, S. and Duncan, F. (1991) Reservation status of Tasmanian plants. I. Angiospermae (Dicotyledonae). In: *Aspects of Tasmanian Botany: A Tribute to Winifred Curtis* (eds M.R. Banks, S.J. Smith, A.E. Orchard and G. Kantivilas), pp. 163-172. Royal Society of Tasmania, Hobart.